

A Study on the Analysis based Remediation on Attainment of MLL in Mathematics among V standard Students from Shimoga District

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Abstract

To study the effectiveness of the analysis structured remedial programme in improving the proportions of students mastering each competency as well as in improving the overall competency (% of competencies mastered) by the group of V standard students in the selected (experimental) schools of Shimoga District.

The investigator had given treatment to the experimental group by teaching difficult concepts in which they were lagging behind. The investigator conducted intervention for teaching non mastered competencies with the selected teaching strategies which had eight components i.e. sequencing and segmenting, drill-repetition and practice-review, directed questioning and responses, control difficulty or processing demands of the task, use of technology, group instruction, supplements to teacher and peer involvement, strategy cues to non mastered students of experimental group from rural and urban areas for two months (Jan to Feb 2008). The controlled group selected was attending regular classes.

Keywords: structured, experimental, sequencing and segmenting, drill-repetition and practice-review

Introduction

The country needs today effective and productive citizens who display scientific and constructive thinking and attitudes in all walks of life. We have entered into the 21st century which is an era of information technology. The child of today has to be prepared for this era of technology for which a strong base of mathematics education is a necessary.

Though there are a number of factors which determine the quality of education, the most vital one that attracts the attention of one and all is the level of achievement. These levels of achievement for any nation are so important that they need to be known periodically to keep a tab on the general health of the education system. Such a requirement warrants the conduct of periodical achievement surveys at different stages of school education in order to initiate remedial measures for improving the quality of education. National Policy on Education (NPE) - 1986 recommended the conduct of periodical achievement surveys at all stages of school education. This has also been reiterated in the National Curriculum Framework for School Education-2005.

In this era of science and technology a strong base of mathematics education is considered an absolute necessity. Mathematics is necessary to train a child to think, reason, analyze and articulate logically.

Learning of mathematics is very essential to develop life skills but as stated earlier, the achievement level of students from primary schools and particularly of female students are very poor. Hence it becomes more essential to explore the attainment levels of MLL competencies in mathematics and to overcome these difficulties with appropriate remedial strategies.

Keeping in view of these the researcher made an attempt to prepare a Remedial Teaching strategy which might have developed the ability of attainment of MLL competencies of young children of mathematics. In this model the method of presenting the subject might have helped the learner in developing a mathematical way of looking things in which he/she required. In this model investigator diagnosed the cause of the non mastery of the competencies and the students are given lot of exercises through activities to correct their mistakes on each step. The Investigator tried to experiment this method with V class children. V class was taken as target because it was the ultimate stage of primary education and it is the period of concrete operational stage (7 or 8 to 11 or 12). According to piaget during this period children continue to expand logic of mathematical thought, they are operational in their thinking; children are ready to think about classes, seriations and numbers. By the age 11 or so they can reverse thought, complete calculations and develop logical ideas of number, weight, area and time.

Title of the Study

“Analysis constructed Remediation on Attainment of MLL in Mathematics among V standard Students from Shimoga District”

Objectives of the Study

The main objectives of the study are

1. To study the level of mastery of MLL's in mathematics of V standard students in selected primary schools of Shimoga District
2. To identify the MLL attainment levels in mathematics of V standard rural and urban students of government primary schools of Shimoga District.
3. To find out the difference between male and female students in MLL attainment levels in Mathematics of selected schools of Shimoga District..
4. To study the effectiveness of the diagnosis based remedial programme in improving the proportions of students mastering each competency as well as in improving the overall competency (% of competencies mastered) by the group of V standard students in the selected (experimental) schools of Shimoga District.

Hypotheses

1. *There is no significant difference in the competency levels of the students studying in different blocks (taluks).*
2. *Students studying in urban and rural areas do not differ significantly in their competency scores.*
3. *Male and female students do not differ significantly in their competency levels*
4. *There is no significant difference between male and female students in MLL attainment scores in Mathematics of schools of Shimoga District.*
5. *There is no significant difference between rural and urban students in MLL attainment levels in Mathematics of schools of Shimoga District.*
6. *There is no significant difference between control and experimental group in the effect of diagnosis-based remediation programme in improving the proportionate of students mastering each competency (percentage of competency mastered) by the group of V standard students in the selected (experimental) schools of Shimoga District*

Variables Selected

The variable related for the study on "Diagnosis based Remediation on Attainment of MLL in Mathematics among V Standard Students from Shimoga District", included remedial teaching which was considered as independent variable, attainment of MLL competencies was dependent variable. The other variables related to the gender, locales of the school (Rural/Urban) were considered as demographic variables.

Dependent Variable

The dependent variable selected for the present study was level of attainment on MLL competencies in Mathematics by the non-masters, selected from 5th standard of rural and urban schools

Delimitation of the Study

- 1) This study comprises only 100 non masters from the V standard of (50 from) urban and (50 from) rural government primary schools from Shimoga district.
- 2) Only Kannada medium was taken up for study.
- 3) The MLL competencies which were taught in I semester only were considered.

Design of the Study

This is an experimental study with pre and post test design. In this study the investigator has selected 18 sub competencies from V standard text book of mathematics. These 18 sub competencies from 7 main areas(competencies) were selected because in all the selected schools these competencies were taught in first semester. Based on these MLL competencies investigator adapted a standard test developed by Dr. H. M. Kashinath in the year 2005. The adaptation was made in the light of competencies taught. The adapted test was also tried out on 30 V standard students. The test finalized by dropping the competencies which were very easy and were very difficult. The opinion of various experts was also taken for finalizing the adapted test. The test was used as pre and post test for assessing the effectiveness of the intervention for learning non mastered competencies. The investigator also planned and developed teaching strategies for teaching each sub-competency selected. The details of these strategies have been discussed below.

The investigator used these strategies for all non-masters from experimental group. The investigator took one session in each school on alternative days for the experimental group. In this way the investigator covered all the non-mastered competencies during two months of intervention. After 2 months of intervention for the experimental group, the investigator conducted post test for both controlled and experimental groups. The controlled group students were attending regular classes whereas students from experimental group were attending the intervention class outside the class room which was taken by the investigator himself. The performance of the students from pre and post tests was analyzed to assess the effectiveness of intervention on learning.

Sample and Sampling Procedure

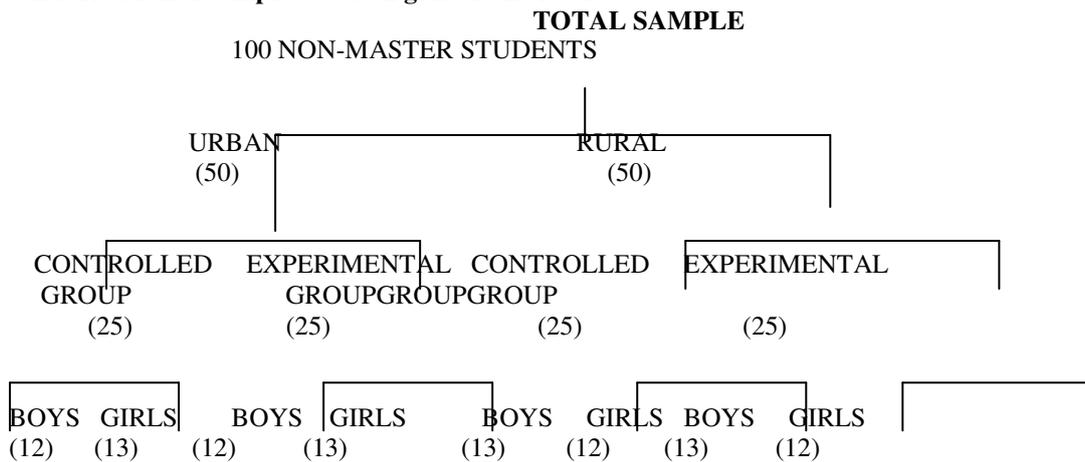
The present study is conducted in three phases. In the First phase the researcher visited schools to gather the data regarding the students' backgrounds from selected schools. The investigator conducted pretest on all the students of 166 schools to diagnose non masters in mathematics. This was done to select sample of the study

representing the total population of non-masters from these schools. Based on pre-test performance, the investigator selected 10% of total population on random basis from these selected schools of Shimoga district. Investigator covered the 10% Of students carefully from both rural, urban schools and also from boys and girls to have equal representation. The investigator maintained the same 10% representation in selection of gender. Total 166 schools selected from the all 7 blocks for meeting 10% representation of the sample selected. Information regarding type of school, infrastructure etc., was obtained from *SarvaShikshaAbhiyan* (SSA) office, Shimoga district of Karnataka State. After selection of 10 % of students from 166 Government primary schools of 7 blocks of Shimoga district, researcher visited all the Block Education officers and Block Resource Persons to get necessary permission for collecting data needed for the study.

In the Second Phase the researcher collected the data from these schools. The researcher visited all the schools in person and administered the pre-test himself with the help of BRC’s and teachers and assured the confidentiality of the data. The sample of the study initially includes 1457 students from 166 schools in 7 Blocks. All the Government primary schools of Shimoga district formed the units of the study. 10% of students selected from each block to achieve first objective of the study. This sample was stratified on the basis of rural and urban locale. All the V standard students studying in these schools initially formed sample of the study. At the end of first semester the students were given pretest to assess attainment of the MLL competencies taught in Mathematics.

In order to serve the second objective of the study, four schools out of total selected schools were randomly selected from Shimoga district, these schools were selected as the number of non masters were more and the basic infrastructure, number of teachers, medium of instruction and socioeconomic status of the families were found to be similar and matching. On the basis of performance on competencies included in the pre- test of Mathematics, the masters and non-masters were identified. Those students who were found achieving less than 80% of the competencies were non-masters and they were considered for experimental group for this study.

Distribution of sample based on gender and locale



Tools Used

MLL Competency Based Test in Mathematics

For assessing, MLL competencies selected for the study a test was adapted after the test developed by Kashinath:*al.*,(2005).The investigator adapted this test in the light of competencies taught in first semester to V standard studying in the selected Government primary schools of Shimoga district. This original test included more number of competencies and sub-competencies. The investigator confined to the competencies taught only in first semester to V standard students.

Treatment

The investigator had given treatment to the experimental group by teaching difficult concepts in which they were lagging behind. The investigator conducted intervention for teaching non mastered competencies with the selected teaching strategies which had eight components i.e. sequencing and segmenting, drill-repetition and practice-review, directed questioning and responses, control difficulty or processing demands of the task, use of technology, group instruction, supplements to teacher and peer involvement, strategy cues to non mastered students of experimental group from rural and urban areas for two months (Jan to Feb 2008). The controlled group selected was attending regular classes.

Statistical Techniques

Using SPSS for windows (version 16.0) following statistical methods were employed for the data collection in the present investigation.

1. Contingency coefficient analysis

2. Independent samples 't' test
3. One-way Analysis of Variance
4. Duncan's Multiple Range test
5. Repeated measure ANOVA

Conclusions**Main findings of the study**

- 1) Male and female students had statistically equal scores on competencies and total scores, except for 'fundamental operations' where female students excelled male students.
- 2) Area-wise comparisons revealed that rural students had higher scores in 'numbers', 'Decimals addition and subtraction with mixed operations', and in 'total scores', than in urban students and in rest of the components students from urban and rural areas had equal scores.
- 3) Sector-wise comparison revealed that in C1- Soraba had least scores, Sagar, Hosanagar and Shimoga had Highest scores, Thirthahalli, Shikaripura and Bhadravathi students had the scores on competency in between.
- 4) In 'fundamental operations' competency students studying in Shimoga , Soraba, Thirthahalli had least scores, Hosanagara had highest scores, students studying in Bhadravathi, Sagara, Shikaripura taluks had the scores in between.
- 5) In 'Fractions, decimals, and percentages, competency students studying in Bhadravathi had least scores, Hosanagara had highest scores, and students studying in Sagar, Shikaripura and Shimoga had moderate scores.
- 6) In 'Decimals fundamental operations' competency students of Soraba and Thirthahalli had least scores, and students of Shimoga and Hosanagar had highest and others in between.
- 7) In 'Decimals addition and subtraction with mixed operations' competency students of Thirthahalli, Sagar, Soraba had least scores, Hosanagar had highest scores, and students of Bhadravathi, Shimoga, Sagar and Shikaripura had moderate scores.
- 8) In 'Angles' competency students of Sagar, had least scores, students of Shimoga and Hosanagara had highest scores and other students in between.
- 9) In 'Total competency scores' students of Sagar had least scores, Shimoga, Hosanagar had highest scores, Thirthahalli, Soraba, Shikaripura, Bhadravathi were in between.

Effect of Remedial Teaching

1. Experimental group had gained significantly higher competencies in total scores than control group. Further, male students of experimental group had substantial gain compared to all other groups.
2. Competency-wise, in 'fundamental operations', 'Fractions, decimals and percentages', 'Decimals fundamental operations', and in 'Decimals, additions subtraction with mixed operations' experimental group had significantly improved compared to control group.
3. In rest of the competencies – 'numbers', 'different numerals' and for 'angles', the remedial teaching did not have significant impact on the experimental group.
4. Male subjects gained more than female students in competencies like- Fundamental operations, Decimals fundamental operations, and in 'angles' and in total competency scores.

Educational Implications of the present study

1. A teacher in group based context of teaching should keep in mind that the instructional time required for mastery of competencies is not uniform across learners. Hence there could be additional time required for some learners when class is heterogeneous. Also, even in a group based instructional program remediation is a necessary condition for mastery.
2. It was found out from the present study that diagnosis based remediation programme leads to mastery of competencies in mathematics among non masters . But time taken for mastering competencies by all non-masters was higher than the time allotted in the school for teaching. In the rigid time frame of an academic year it would then be necessary that the competencies that are difficult for the students may be identified and shifted to the bridge course. This will be the requirement for the diagnosis based remediation programme prescribed for a grade to be appropriate for the learners and for ensuring universal achievement of a comparable standard by all learners.
3. The curriculum planners can design the curriculum based on concrete to abstract learning continua in mathematics by providing concrete, semi-abstract and abstract activities and games and live experiences in and around the pupils daily life activities which will lead to high level of attainment of MLL competencies.
4. Training programme can be designed for training the primary school teachers in adopting diagnosis based remediation programme for teaching mathematics at the primary level.
5. Teachers can use the diagnosis based remediation programme to achieve mastery of MLL competencies in mathematics and can also create an interest among the students to learn mathematics.

6. Findings of this study demand that teachers must try to improve the quality of teaching so that abilities of attaining MLL competencies of mathematics can be developed among children.. Teachers with the help of this study can develop their own teaching strategies to teach different subjects interestingly and innovatively.
7. The diagnosis based remediation program is useful for students who lag in decimals, percentage and fractions where one can expect better results.

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